A-Part 1/Item 5 Closure Plan for T-Plant

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FIGURE

Figure 11-1. Example Decontamination and Inspection Checklist for T Plant Complex Closure F11-1

11.0 CLOSURE AND FINANCIAL ASSURANCE [I]

This chapter describes the planned activities and performance standards for closure of the T Plant Complex in accordance with the requirements of WAC 173-303-610. The date for T Plant Complex closure has not been established. Closure will begin when T Plant Complex waste management units are no longer managing regulated waste.

11.1 CLOSURE PLAN/FINANCIAL ASSURANCE FOR CLOSURE [I-1]

T Plant Complex closure will not occur until well into the future (Section 11.4). Consequently, a closure method for this unit (i.e., clean closure, 'modified' closure, or landfill closure) has not been determined. Clean closure as a *possible* closure option might be pursued for some or all of the T Plant Complex waste management units. In support of TSD unit closure, the T Plant Complex operating record will identify locations where dangerous waste operations occurred.

This chapter presents the performance standards and general closure activities for clean closure. Where pursued, clean closure would be with respect to dangerous waste contamination from RCRA TSD unit operations. For clean closing waste management unit(s), postclosure activities would not be applicable or required. Any portion of a unit unable to clean close before T Plant Complex decommissioning (e.g., 221-T Building canyon, Section 11.3.5) would be placed in a safe and stable condition protective of human health and the environment and closed during T Plant Complex decommissioning.

As described in Condition II.H.3 of the Hanford Facility RCRA Permit (DW Portion), federal facilities are not required to comply with financial assurance requirements of WAC 173-303-620.

Past-practice waste is subject to cleanup provisions of the Tri-Party Agreement (Ecology et al. 2001) and is not subject to permitting requirements (Chapter 4.0). 221-T Building cells that have contained only past-practice waste during the period of T Plant Complex TSD unit operations will not require closure under this permit.

11.2 CLOSURE PERFORMANCE STANDARD [I-1a]

Clean closure would eliminate future maintenance and be protective of human health and the environment. Clean closure as defined by the Hanford Facility RCRA Permit (Condition II.K.1) requires decontamination or removal and disposal of all dangerous waste, waste residue, or contaminated equipment, soil, or other material to clean closure performance standards of WAC 173-303-610(2). Clean closure would be achieved for soil and structures when removal and decontamination standards prescribed by WAC 173-303-610(2)(b) visually or analytically were verified.

11.2.1 Clean Closure Standard for Structures and Components

The clean closure removal and decontamination standard for metal or concrete materials (e.g., tanks, ancillary equipment, secondary containment, and storage area structures) remaining after closure would be a 'clean debris surface'. This standard meets clean closure requirements for containment buildings of WAC 173-303-695, for tank systems of WAC 173-303-640(8), and for container management areas of WAC 173-303-630(10). The standard is a visually verifiable standard established in accordance with alternative treatment standards for hazardous debris of 40 CFR 268.45, Table 1. This standard is as

11.3 CLOSURE ACTIVITIES [I-1b]

This section identifies methods that could be used to achieve clean closure of the various T Plant Complex waste management units. At the time of closure, this chapter will be reviewed and closure activities modified as necessary to reflect current regulations, interagency agreements, and use of up-to-date closure methods.

Access to locations undergoing closure will be controlled during the closure period. Access will be limited to personnel required to support unit closure activities. All closure activities will be performed to keep personnel exposure ALARA.

11.3.1 Maximum Extent of Operation [I-1b(1)] and Maximum Waste Inventory [I-1c]

The maximum extent of TSD unit operations of tank systems, container management areas, miscellaneous units, and a containment building requiring closure under this plan is identified in Chapter 1.0. Section 11.3.4.2 identifies that the 221-T Tank System did not operate under this permit but would be closed under this chapter.

The maximum waste inventory for T Plant Complex waste management units would be based on information contained in Chapter 1.0, latest revision.

11.3.2 Removing Dangerous Waste [I-1b(2)]

At the beginning of closure, all dangerous waste inventories (including liquid waste in tank systems, containerized waste in container management areas, and noncontainerized waste in containment buildings) would be removed and transferred to an appropriate receiving unit. Where required, noncontainerized waste would be packaged for transfer. Designation of waste and debris, including that generated during closure activities, would meet the requirements of WAC 173-303 and disposal would meet the land disposal notification and certification requirements of WAC 173-303-140.

11.3.3 Closure Activities [1b(3)]

Clean closure of T Plant Complex waste management units would be as follows:

- Remove and dispose of dangerous and/or mixed waste inventory
- Remove contaminated process equipment and components for reuse or disposal
- Review operating records and interview personnel to determine spill history
- Inspect structures and components to:
  - Identify surfaces that already meet the clean debris surface standard and clean close
  - Identify surfaces requiring removal or decontamination to meet the clean closure standard
  - Identify cracks or openings that could have allowed the escape of contamination to soil and if none, clean close soil if no other sources of contamination exist.

standards from Section 11.2.1. Decontamination would be by hand, using brushes, scouring pads, rags and nonregulated cleaners, or high pressure/low-volume steam or water spray. As appropriate, decontamination solutions could be a combination of water and approved cleaners or chemicals (e.g., nitric acid, citric acid). Decontamination would be conducted to minimize the quantity of rinsates generated. Rinsate and decontamination waste would be collected, designated, and managed accordingly. Decontamination would be documented on a checklist similar to the *T Plant Complex Closure Decontamination and Inspection Checklist,* Figure 11-1. The decontaminated surfaces would be inspected visually as described in Section 11.2.1 and acceptance documented on the checklist used to document the decontamination. Copies of completed visual inspection checklist(s) would be filed in the Hanford Facility Operating Record.

Alternately, as described in Section 11.2.1, clean closure of decontaminated surfaces could be analytically verified by collecting and sampling decontamination rinsate instead of through visual inspections.

11.3.4.1.2 Secondary Containment

The 2706-T Building Tank System secondary containment consists of sealed or lined concrete floors and sumps of the 2706-T, 2706-TA, and 2706-TB Buildings. The 2706-T and 2706-TA Buildings are also 40 CFR Subpart DD containment buildings. Clean closure activities for tank system secondary containment also would meet the requirements for clean closure of containment buildings. Concrete surfaces would be removed *or* if remaining after closure would be inspected for a clean debris surface (Section 11.2.1). Radiation surveys and/or chemical field screening could be used to assist locating contamination. Acceptance would be documented on an inspection checklist.

Surfaces that do not meet clean closure standards would be decontaminated. Decontamination could be by hand using mops, rags, brushes, water, and appropriate nonregulated detergent or by mechanical means using a power scrubber or high-pressure/low-volume steam or water spray. Extreme contamination could be removed using more aggressive physical extraction technologies such as abrasive blasting, grinding, or scarification. Cleaning would be conducted so as to minimize the quantity of rinsates or residues generated. Sumps used as rinsate collection areas would be cleaned and inspected last. Rinsate and decontamination waste would be collected, designated, and managed accordingly. Decontamination and visual acceptance would be documented on a checklist and the checklist filed as described in Section 11.3.4.1.1.

Alternately, as described in Section 11.2.1, clean closure of decontaminated surfaces could be analytically verified by collecting and sampling decontamination rinsate instead of through visual inspections.

11.3.4.1.3 Closure of Underlying Soils

No pathway to soil is anticipated to exist for 2706-T Building Tank System contaminants. Engineered secondary containment of the 2706-T, TA, and TB Buildings was designed to prevent escape of waste to the environment and is maintained to ensure integrity (Chapter 4.0). Nevertheless, the 2706-T Building Tank System concrete secondary containment surfaces would be inspected for cracks or openings. Acceptance would be documented on an inspection checklist. Cracks or other openings (if any) would be mapped and investigated. If found to be through-thickness of the concrete, the underlying soil would be sampled as described in Section 11.2.2 for clean closure.

Sample data would be evaluated and sample results compared to clean closure action levels for soil (Section 11.2.2). No further soil sampling would occur under this plan. Constituents of concern that

The 211-T concrete collection sump could be excavated and disposed as debris or could be inspected, decontaminated (as necessary), and clean closed in-place as described in Sections 11.2.1 and 11.3.4.1.2.

Buried, abandoned tank system piping would be excavated, designated, and disposed accordingly. Buried piping had no secondary containment but was tested regularly to ensure integrity (Chapter 4.0). Consequently, soil contamination from tank system operations is not anticipated. During excavation activities, radiation surveys and/or chemical field screening could be used to identify potential dangerous and/or mixed waste soil contamination. Because the excavation would be occurring within a CERCLA OU and therefore on a CERCLA site, contaminated soil would be returned to the excavation and the location documented for future disposition as described in Section 11.2.2.

11.3.5 Containment Building Closure

The only T Plant Complex containment building requiring closure under this permit is the 221-T Building that includes the railroad tunnel, canyon deck, and selected canyon cells (Chapter 1.0).

Closure of the containment building structure with regard to contamination from containment building storage operations will occur in accordance with WAC 173-303-610 and with WAC 173-303-695 that incorporates the requirements of 40 CFR 264.1102 by reference. If clean closure is the final closure method, all waste residues, contaminated containment system components, subsoil, structures, and equipment must be decontaminated or removed and managed as hazardous waste [40 CFR 264.1102(a)]. However, the 221-T Building is a canyon structure. The final closure method for this structure has not been identified. This structure has been identified in the *Long-Term Facility Decommissioning Plan* (DOE/RL-96-0046) as part of the 'T Plant facility complex' and as a "Candidate Key Facility" for decommissioning under the *Facility Decommissioning Process* of Section 8.0 of the Tri-Party Agreement (Ecology et al. 2001). The *Facility Decommissioning Process* is intended to coordinate disposition of this structure with other similar Hanford Site structures and, where appropriate, with future disposition initiatives (e.g., Canyon Disposal Initiative). Because of the size and design of such structures, clean closure is not possible without significant demolition to gain access to potentially contaminated structure surfaces or underlying soils. If, as indicated in the *Long-Term Facility Decommissioning Plan,* this structure formally is declared a key facility at the time of shutdown, the *Facility Decommissioning Process* could define a decommissioning pathway other than demolition and clean closure. If the 221-T Building cannot clean close, 40 CFR 264.1102(b) requires that closure of the containment building as a landfill be considered that could invoke postclosure requirements of WAC 173-303-610(8). At that time, this chapter will be modified to identify a final closure method and to address any required postclosure activities.

11.3.6 2706-T and 2706-TA Building Miscellaneous Unit Closure

Because the 2706-T and 2706-TA Buildings are attached structurally and are of similar design and perform similar operations, their closures will be considered together and can follow the same general steps. Operational areas of these buildings have engineered secondary containment and leak detection systems meeting the tank system requirements of WAC 173-303-640 (Chapter 4.0). These buildings also meet the miscellaneous unit requirements identified in Chapters 4.0 and 6.0. As described in Section 11.3.4.1.3, soil beneath these buildings is expected to be clean closed.

At closure, any noncontainerized waste will be containerized, as necessary and practicable, for transport to an onsite TSD unit or offsite TSD facility. Operating records will be reviewed and personnel

- Visually inspect decontaminated surfaces or sample rinsate from decontaminated surfaces as described in Section 11.2.1 to verify the achievement of clean closure standards

- Investigate soil contamination pathways and, if necessary, sample soil to clean close the soil *or* disposition potentially contaminated soil as described in Section 11.2.2.

- Collect rinsate and decontamination waste and designate and manage as described in Section 11.3.2.

11.3.8 Closure of Containers

Operation of the T Plant Complex involves the storage and/or treatment of dangerous and/or mixed waste in various containers. Such containers can be constructed of wood, metal, cardboard, or fiberglass in the form of boxes, drums, and secondary containment pans. Pumps are herein considered containers with regard to decontamination of internals for clean closure.

Containers that held dangerous and/or mixed waste could be removed and transported to a permitted unit for disposition or rendered 'empty' at the T Plant Complex in accordance with WAC 173-303-160(2). Containers could be rendered empty by being triple rinsed following the requirements of WAC 173-303-160(2)(b). Container liners and container decontamination solutions or waste residues generated onsite would be collected, designated, and managed as described in Section 11.3.2.

11.3.9 Sampling Quality Control [I-1b(4)]

Laboratory sampling and analysis of soil or rinsate could be required. Sampling would be in accordance with an approved sampling and analysis plan (SAP). The SAP would document the type and quality of data and the number and location of samples appropriate to demonstrate the achievement of action levels.

To ensure data quality, sampling and analytical procedures would be conducted in accordance with standard EPA methods described in the most recent edition of *Test Methods for the Evaluation of Solid Waste: Physical/Chemical Methods*, SW-846, or equivalent methods (EPA 1986). The appropriate field quality control would be ensured through use of field quality control samples.

11.3.10 Decontamination of Equipment

Potentially contaminated closure equipment or materials could be decontaminated for reuse or disposal or could be managed as dangerous waste.

Closure equipment could be decontaminated using high-pressure, low-volume steam or water sprays and appropriate cleaners. Equipment that was not reusable would be designated and managed as described in Section 11.3.2. Portable pumps and waste transfer lines used to collect decontamination rinsate would be triple rinsed for nonregulated reuse or disposal.

11.4 SCHEDULE FOR CLOSURE [I-1f]

Closure of the T Plant Complex is not anticipated to occur within the next 25 years (i.e., not before 2025). When a more definite closure date is established, a revised closure chapter and closure schedule

EXAMPLE

T PLANT COMPLEX CLOSURE DECONTAMINATION AND INSPECTION CHECKLIST

This checklist is intended to document a 'clean debris surface'[1] for the following T Plant Complex components, structures, and/or materials.

1. Building/location: _____
2. Component(s)/area(s) _____
3. Material (e.g., concrete metal, plastic): _____
4. No cracks or openings are visible that could have provided a pathway to soil for contamination. _____

_____ _____
Signature Date

5. The above materials have been inspected visually and have attained a clean debris surface[1].

_____ _____
Signature Date

6. Decontamination:
   A. Method (NA 6C if no decontamination performed): _____
   B. Parameters (check appropriate parameters):
      - ☐ Temperature _____
      - ☐ Propellant _____
      - ☐ Solid media (e.g., shot, grit, beads) _____
      - ☐ Pressure _____
      - ☐ Surfactant(s) _____
      - ☐ Detergents _____
      - ☐ Grinding/striking media (e.g., wheels, piston heads). _____
      - ☐ Depth or surface layer removal _____
      - Other _____

   C. Decontamination (steps 6A and B) is complete.

_____ _____
Signature Date

7. The identified materials have been inspected visually and have attained a clean debris surface[1]. Authorized Representative:

_____ _____
Signature Date

[1] Definition of 'clean debris surface' from Table 1, Alternative Treatment Standards for Hazardous Debris (40 CFR 268.45): "'Clean debris surface' means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discoloration's, and soil and waste in cracks, crevices, and pits, may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area".

Figure 11-1. Example Decontamination and Inspection Checklist for T Plant Complex Closure.